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Abstract of the Disclosure

[0040] A method suitable for cleaning the interior surfaces of a process chamber is disclosed. The invention is particularly effective in removing silicon nitride and silicon dioxide residues from the interior surfaces of a chemical vapor deposition (CVD) chamber. The method includes reacting nitrous oxide ( $N_2O$ ) gas with nitrogen trifluoride ( $NF_3$ ) gas in a plasma to generate nitric oxide (NO) and fluoride (F) radicals. Due to the increased density of nitric oxide radicals generated from the nitrous oxide, the etch and removal rate of the residues on the interior surfaces of the chamber is enhanced. Consequently, the quantity of nitrogen trifluoride necessary to efficiently and expeditiously carry out the chamber cleaning process is reduced.